

# Assessment of Recruit Motivation and Strength (ARMS) Study:

Physical Performance Testing at MEPS

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# Problem

- ◆ Accession process does not screen out everyone with current medical problems
  - Approximate 5% loss from EPTS conditions
- ◆ Accession process allows many unfit individuals to enter recruit training
  - 4-14% fail the initial fitness testing

<u>Fort Jackson</u>	<u>Men</u>	<u>Women</u>
FY00	4.3	12.2
FY01	4.4	12.7
FY02	5.4	14.8

# Current Screening Process Challenges

- ◆ Disqualifies many who can serve successfully
  - Waiver studies (<5% who enter AD)
    - ◆ Asthma, ADHD, etc: Demonstrate those who enter with a waiver just as likely to remain on AD
  - Unknown whether those who did not receive waivers could serve successfully
- ◆ Fails to identify many with disqualifying conditions
  - EPTS studies (5% leave AD)
    - ◆ Asthma, ADHD, etc- Demonstrates that most who receive EPTS discharges concealed their condition at MEPS
  - Unknown how many enter the service with disqualifying conditions and do well

# Current Physical Exam

A good physical depends on a good history

- Many disqualifying conditions can not be detected by a physician without the applicant revealing them
- Those who choose to conceal will not be detected even with further testing
  - ◆Asthma, mental health difficult to screen for

Volunteers want to get into the military

- Incentive to conceal conditions

# Relationship of Any DQ On Early Attrition Among AD: All Services

	Any DQ at MEPS	No DQ meets physical standards
<b>Start AD BCT</b>	<b><u>17,000</u></b>	<b><u>121,000</u></b>
Required a waiver for entry	5,200	~6,000 EPTS Unknown # make it
Did not require a waiver for entry	11,800	Less than 115,000
Early discharge for any reason within 6 months	~2,790 (16%)	~18,000 (15%)

# Risk Factors for Attrition

- ◆ Non-Modifiable Predictors of Attrition
  - Gender, Race, Age
- ◆ Potentially Modifiable Factors
  - Psychological
  - No useful screening test
  - Likely best addressed after accession
- ◆ Modifiable Risk Factor for Attrition
  - Physical Fitness
  - Likely best addressed before accession

# Increased Fitness Reduces Injury and Attrition

- ◆ Fitness and training procedures important modifiable risk factors for attrition
  - Predicting attrition in basic military training. Mil Med 164:710-714, 1999
- ◆ Injury rates largely dependent on low levels of current physical fitness, low levels of previous physical activity, smoking, age, prev injury
  - Am J Prev Med 18(S)54-63, 2000
- ◆ Formal pre-training conditional program result in lower attrition during BMT and this reduction was more effective than training recruits at a slower pace by extending BMT by one month.
  - Ann Acad Med Singapore 26:3-7, 1997

# Major Contributors to Failure

- ◆ Lack of physical fitness
- ◆ Poor motivation
- ◆ History of failure
- ◆ Mental health disorders (mostly adjustment)
- ◆ Injuries - result of poor physical fitness
  
- ◆ A performance test administered at MEPS may well address fitness and motivation

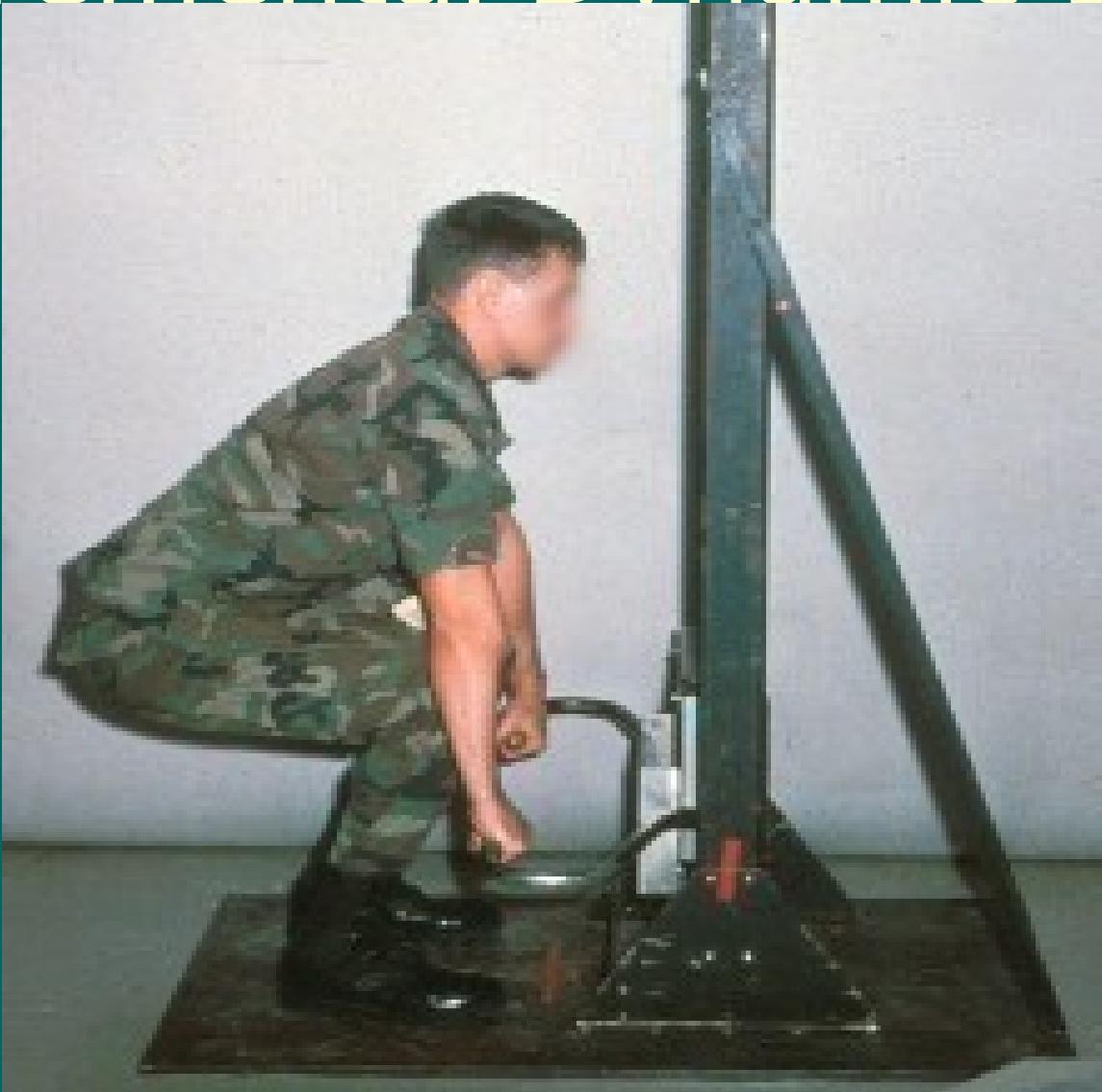
# ARMS

## (Assessment of Recruit Motivation and Strength)

# Physical Performance Testing

- ◆ Done immediately after ortho-neuro exam
  - 1) Step- test (modified Harvard step test, 16")
    - Heart rate after 5 minutes
    - All difficulties performing the test will be noted
    - Motivation is a factor in performing this test
    - Difficult to perform for those with lower extremity problems
  - 2) Push-ups
    - Number done in one minute
  - 3) Incremental Dynamic Lift
    - Maximal weight lifted
    - Utilized by the Air Force

# Incremental Dynamic Lift



# Hypotheses

- 1) The step test will identify some applicants with undisclosed disqualifying conditions (such as exercise induced bronchospasm, shoulder, hip, knee, foot problems) and some who lack motivation to train for military service
- 2) Those who perform better on the performance test prior to shipping will have fewer injuries and lower attrition than those who enter active duty who can not pass a minimum performance test

# Hypotheses (con't)

- 3) Physical performance testing is a better predictor of success in the military than a medical screening exam alone. Success will be determined by the following:
  - a) Entrance onto AD:  
Those recruits who pass the performance testing are more likely to enter AD
  - b) EPTS attrition:  
Those who admit to disqualifying conditions, pass the performance testing, and enter AD will do better than those who have not admitted to any medical condition and do not pass the performance testing
  - c) Injury and need for rehabilitation at BCT:  
Those who pass the ARMS will suffer from fewer injuries during BCT than those who do not.

# Methodology

- ◆ Cohort study conducted at 5 MEPS
  - Baltimore, Chicago, Sacramento
  - NY(?), Jacksonville(?)
- ◆ Anticipated start date: March 2004
- ◆ Three phase study
- ◆ Phase I & II (funded) -finished by July 2004
  - Physical performance testing required but not will not impact qualification status
- ◆ Phase III (currently not funded)

# Phase I

- ◆ To incorporate the physical performance testing in the five Military Entrance Processing Stations (MEPS)
- ◆ Key objectives include:
  - Minimally disruptive implementation of ARMS study at MEPS
  - Determination of the expected range of performance outcomes among the military applicant population

# Phase II

- ◆ Collect data on disqualifying conditions
- ◆ Retest prior to shipping
- ◆ Key objectives include:
  - Description of the ability of those with admitted disqualifying conditions compared to those without any admitted problems to pass the components of the ARMS
  - Examination of the relationship between initial ARMS results and subsequent military accession
  - Examination of change in ARMS testing from initial MEPS exam to shipping date

# Phase III

- ◆ Admit those with history of disqualifying conditions who are able to pass the ARMS (“automatic waiver”). Current problems will still be considered disqualifying.
- ◆ To determine whether applicants with a disqualifying condition who could pass the ARMS could perform on Active Duty (AD) as well as those entering without any known medical condition.
- ◆ Correlate ARMS results with subsequent injuries and attrition from Basic Combat Training (BCT).

# Details

- ◆ Need ~10,000 study participants
  - Expect 3% (300) to have permanent DQs based on objective testing (BP, refraction, hearing, physical exam, HIV)
    - ◆ May pursue a waiver through the normal process
  - Expect 5% (~500) to have a history of (NOT Current) disqualifying conditions
    - ◆ May enter if they “pass” the performance testing
  - ~9,200 initially qualified
    - ◆ Expect ~60%(~5520) to enter active duty within a year

# Details

- ◆ Start with an atmosphere of success
  - Those who fail may continue to try until they can pass the performance test
    - ◆ Expect ~5-10% to fail (~9,000 pass the performance test)
    - ◆ Expect greater number will pass Reception Battalion fitness test, fewer injuries, fewer discharges
- ◆ Describe the impact of requiring a passing performance test prior to shipment to BCT
- ◆ Future: Cost-effectiveness model of various “passing” performance levels considering recruiting, accession, training, injury and attrition costs

# Potential Benefits of Adding a Performance Test

- ◆ Emphasis will be placed on physical fitness prior to entry
- ◆ Recruiters will be able to provide information to applicants on how to train
  - Reduce need for number recruited (30,000 more expected to be eligible to go to BCT)
- ◆ Will be a measure of motivation
- ◆ Loss will be moved to the left based on measurable criteria likely to be related to future attrition
- ◆ Decreased injuries during BCT with higher level of physical fitness prior to entry

# Questions or Comments?

# Published Data on Attrition

- ◆ Psychological problems single most common reason for attrition
  - Physical symptoms as indicator of depression and anxiety. Mil Med 166:796-799, 2001
- ◆ Most valid items predicting attrition are psychological or behavioral
  - Predictors of Navy Attrition: A demonstration of potential usefulness for screening. Mil Med 167:770-776, 2002